

REMARKS

The Office Action dated May 22, 2007, has been received and carefully reviewed. The preceding amendments and the following remarks form a full and complete response thereto. Accordingly, claims 2-10 and 12-19 are pending in this application and are submitted for consideration.

Claims 2-3, 10-12, 15, and 16-19 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,051,955 to Saeki et al. ("Saeki"). Applicants respectfully traverse the rejection and submit that claims 2-3, 10-12, 15 and 16-19 recite subject matter not disclosed the cited prior art.

Claim 16, upon which claims 2-10, 14-15 and 19 depend, recites a charge control circuit for a battery pack, which includes rechargeable battery elements (9) arranged in respective parallel branches (3) of a parallel circuit of battery voltage sources, state monitoring means (11, 13, 17) for monitoring the battery state of battery elements (9), and switches (15) that can be controlled by the state monitoring means, for interrupting the current flow or releasing the current flow. Each parallel branch (3) has associated state monitoring means (11, 13, 17), and a respective switch (15) is provided in each parallel branch (3). The respective switch (15) can be controlled on the basis of the battery state, which is monitored by the state monitoring means (11, 13, 17), of the relevant parallel branch (3), in order to selectively block or release only this relevant parallel branch (3) for the current flow.

Claim 17, upon which claims 12-13 and 18 depend, recites a discharge control circuit for a battery pack having rechargeable battery elements (9), which are arranged

in respective parallel branches of a parallel circuit of battery voltage sources (3). The discharge control circuit includes state monitoring means (11, 13, 17) and switches (15), which can be controlled by the state monitoring means, for interrupting the current flow or releasing the current flow. Each parallel branch includes, in series with the battery voltage source (3) having one or more battery elements (9) represented by it, a respective controllable switch (15) having an integrated diode (23), or one which is connected in parallel therewith, which is conductive in the discharge current flow direction. The state monitoring means (13) are set so as to switch the controllable switch (15) of a respective parallel branch from a high-resistance state to a low-resistance state when a discharge current, having a minimum current level, flows through the diode (23) associated with the switch (15), such that only the respective parallel branch is selectively blocked or left open for the flow of charge.

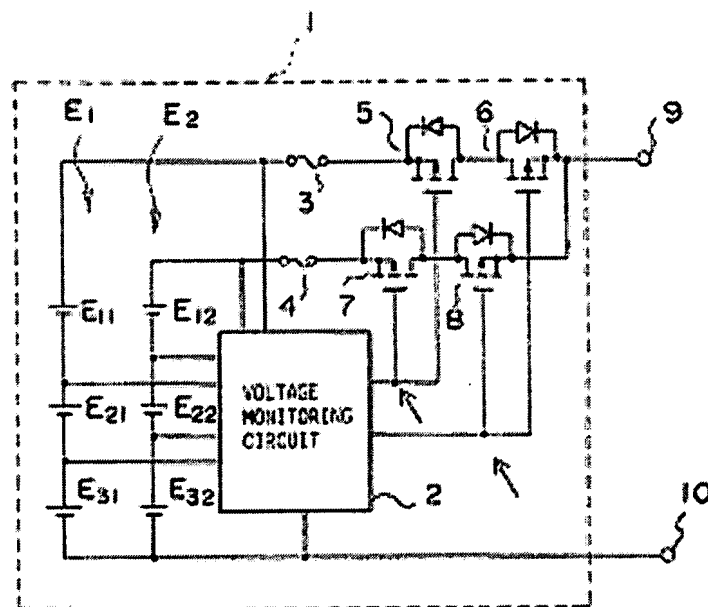
In contrast to the claimed invention, the device disclosed in Saeki cannot selectively block or release only this relevant parallel branch. The Office Action referred to Saeki column 5, line 65 through column 6 line 14, which states:

The voltage monitoring circuit 2 monitors 5 the voltages of the battery cells E11, E12, E21, E22, E31 and E32, and when the voltage of one of the battery cells becomes less than a predetermined value in the discharge state of the battery unit 1, the voltage monitoring circuit 2 detects the excessive discharge state and turns OFF the FETs 5 **and 7**, so as to **cut off the discharge current from the battery unit 1** and to prevent the excessive discharge. On the other hand, the voltage monitoring circuit 2 monitors the voltages of the battery cells E11, E12, E21, E22, E31 and E32, and when the voltage of one of the battery cells becomes greater than a predetermined value in the charging state of the battery unit 1, the voltage monitoring circuit 2 detects the excessive charging state and turns OFF the FETs 6 **and 8**, so as to **cut off the**

charging current to the battery unit 1 and to prevent the excessive charging.

Col. 5, line 65 – col. 6, line 14 of Saeki (emphasis added). This section clearly describes a system for cutting off discharge or charging current from or to the entire battery unit 1 and does not disclose or suggest selectively turning off a single branch, as asserted by the Office Action. In fact, Saeki fails to use the words “select” or “selectively” even once in its specification. Further, in the device illustrated in Fig. 3, the gates of FET's 5 and 7 are connected, and gates 6 and 8 are connected. Fig. 3 is duplicated below with arrows showing the electrical connections.

FIG. 3



As a result, the voltage monitoring circuit 2 must actuate FET's 5 and 7 together, and FET's 6 and 8 must be selected together. That is, one using the structure disclosed in

Fig. 3 could not selectively turn off a single branch as claimed in the present application.

A rejection formulated under 35 U.S.C. § 102(b) must be based upon a single reference that discloses each and every element of the claims or it is improper. Here, the sections of Saeki that are relied upon clearly fail to disclose the elements of claims 16 and 17 relating to features of the present inventions for selectively blocking or leaving open flow of charge to a single parallel branch. Thus, the rejection to claims 2-3, 10-12, and 15-19 is improper. Accordingly, Applicants request that the rejection be withdrawn and claims 2-3, 10-12, and 15-19 be allowed.

Claims 4-9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Saeki with U.S. Patent No. 5,990,664 to Rahman. Applicants respectfully traverse the rejection and submit that claims 4-9 recite subject matter not disclosed or suggested by the cited prior art.

Claims 4-9 depend from claim 16 and are patentable over Saeki for at least the same reasons already described above. Rahman fails to cure the above-described deficiencies of Saeki and as a result, the rejections of claims 4-9 are improper. Accordingly, Applicants request that the rejection be withdrawn and claims 4-9 be allowed.


In view of the above, all objections and rejections have been sufficiently addressed. Applicants submit that the application is now in condition for allowance and requests that claims 2-10 and 12-19 be allowed and this application passed to issue.

In the event that this paper is not timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account No. 02-2135.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

Respectfully submitted,

8-22-07
Date



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